

Name: _____ Date: _____

Algebra 2/Trig: The Law of Sines

DO NOW: (Review) Solve for m : $|2m - 1| - 2 \geq 0$

A] Law of Cosines: $c^2 = a^2 + b^2 - 2ab \cos C$

***If the problem involves _____ sides and _____ angle, use the **Law of Cosines**.

B] Law of Sines: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

***If the problem involves _____ sides and _____ angles, use the **Law of Sines**.

In each instance, decide which law to apply, and then solve the problem.

1) The measures of the 3 sides of an isosceles triangle are 17, 17, and 8. What is the measure of the vertex angle? (nearest tenth)

2) In $\triangle ABC$, $a = 10$, $m\angle A = 30^\circ$, and $m\angle B = 50^\circ$. Find b to the nearest integer.

3) In $\triangle CAR$, $a = 24$, $m\angle A = 27^\circ$, and $m\angle C = 83^\circ$. Find c to the nearest integer.

4) In $\triangle GHI$, $m\angle G = 59^\circ$, $m\angle H = 53^\circ$, and $HI = 12$. Find GI (nearest tenth).

5) In $\triangle DAT$, $m\angle D = 27^\circ$, $m\angle A = 105^\circ$, and $t = 21$. Find d to the nearest integer.

6) In $\triangle PAR$, $p = 8.5$, $m\angle P = 72^\circ$, and $m\angle A = 68^\circ$. Find r to the nearest tenth.

7) In $\triangle REM$, $r = 3\sqrt{2}$, $m\angle R = 135^\circ$, and $m\angle M = 30^\circ$. Find the exact value of m .

8) Each leg of an isosceles triangle is 15. The vertex angle is 70° . Find the base of the triangle (nearest hundredth).

9) In $\triangle ABC$, $m\angle A = 31^\circ$, $m\angle C = 42^\circ$, and $a = 11$. Find c to the nearest tenth.

10) In $\triangle DEF$, $m\angle D = 100^\circ$, $m\angle E = 55^\circ$, and $d = 21$. Find e to the nearest tenth.

11) In $\triangle GHI$, $m\angle G = 73^\circ$, $m\angle H = 24^\circ$, and $h = 9$. Find g to the nearest tenth.

12) In $\triangle JKL$, $m\angle J = 80^\circ$, $m\angle K = 56^\circ$, and $JL = 13$. Find JK to the nearest tenth.

13) In $\triangle MNO$, $m\angle M = 42^\circ$, $m\angle O = 53^\circ$, and $NO = 31$. Find MO to the nearest tenth.

14) In $\triangle CAP$, $c = \sqrt{6}$, $m\angle C = 45^\circ$, and $m\angle A = 75^\circ$. Find the exact value of p .

